



INTERNATIONAL UNION  
OF RAILWAYS

# **CEF PSA UBS PROJECT FINAL CONFERENCE AMOC**

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# EUROPEAN REGULATORY FRAMEWORK

MANDATORY



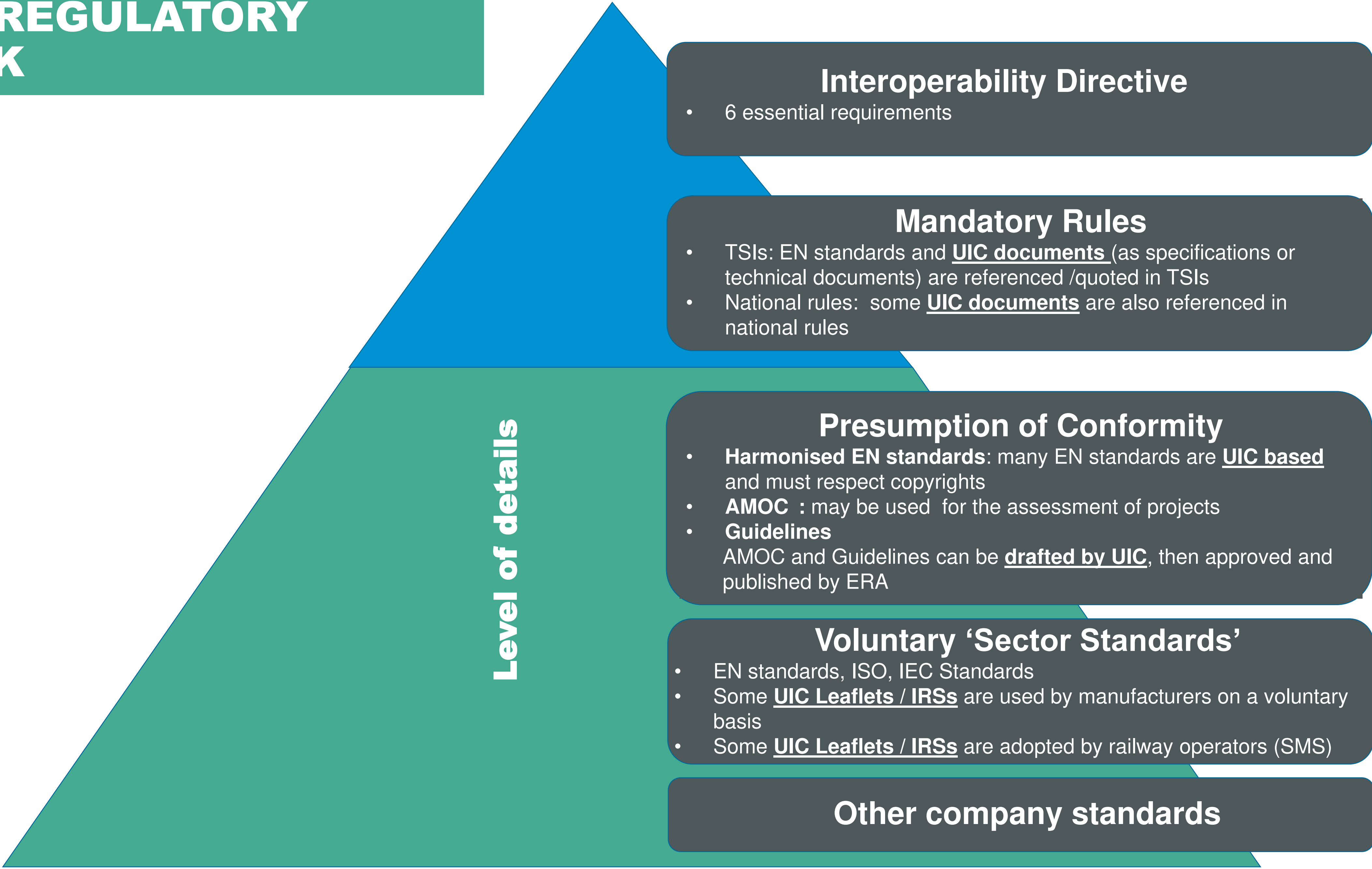
**Interoperability Directive**

- 6 essential requirements

**Mandatory Rules**

- TSIs: EN standards and UIC documents (as specifications or technical documents) are referenced /quoted in TSIs
- National rules: some UIC documents are also referenced in national rules

VOLUNTARY



**Presumption of Conformity**

- **Harmonised EN standards:** many EN standards are UIC based and must respect copyrights
- **AMOC** : may be used for the assessment of projects
- **Guidelines**  
AMOC and Guidelines can be drafted by UIC, then approved and published by ERA

**Voluntary 'Sector Standards'**

- EN standards, ISO, IEC Standards
- Some UIC Leaflets / IRSs are used by manufacturers on a voluntary basis
- Some UIC Leaflets / IRSs are adopted by railway operators (SMS)

**Other company standards**

*Article 19(3) of Regulation (EU) 2016/796 of the European Parliament and of the Council of 11 May 2016*

- The Agency may issue guidelines and other non-binding documents to facilitate the implementation of railway interoperability legislation, including assistance to Member States in identifying national rules that can be repealed further to the adoption or revision of TSIs.

*Article 4 (i) of Regulation (EU) 2016/796 of the European Parliament and of the Council of 11 May 2016*

- The Agency may: ... issue guidelines and other non-binding documents facilitating application of railway safety and interoperability legislation pursuant to Articles 13, 19, 28, 32, 33 and 37.
- [https://www.era.europa.eu/sites/default/files/library/docs/opinion-advice/AMOC\\_supporting\\_guidance\\_v1.0\\_final.pdf](https://www.era.europa.eu/sites/default/files/library/docs/opinion-advice/AMOC_supporting_guidance_v1.0_final.pdf)

# EUROPEAN REGULATORY FRAMEWORK

An **AMOC** defines good practice that can be used to cover operational risks. In doing so, an AMOC can also contain reference to external document



**Under the coordination of the TSI OPE WG (ERA)**

- **Safety of load**
- **Safety of passengers**
- **Tests & Checks (brakes)**

[https://www.era.europa.eu/sites/default/files/library/docs/opinion-advice/tsi-ope-amoc-tests\\_checks\\_braking-v2\\_en.pdf](https://www.era.europa.eu/sites/default/files/library/docs/opinion-advice/tsi-ope-amoc-tests_checks_braking-v2_en.pdf)  
[https://www.era.europa.eu/sites/default/files/library/docs/opinion-advice/tsi\\_ope\\_amoc\\_safety\\_of\\_load\\_v1\\_final.pdf](https://www.era.europa.eu/sites/default/files/library/docs/opinion-advice/tsi_ope_amoc_safety_of_load_v1_final.pdf)



# AMOC: ACCEPTABLE MEANS OF COMPLIANCE

- The basis for the development of AMOCs is **EU Regulation 2019/773**, paragraph 4.4 which requires ERA to produce AMOCs:
  - **Safety of load** (see 4.2.2.4.1)
  - **Safety of passengers** (see 4.2.2.4.2)
  - **Checks and tests before departure**, including brakes and checks during operation (see 4.2.3.3.1)
  - **Train departure** (see 4.2.3.3)
  - **Degraded operation** (see 4.2.3.6)
- An **AMOC provides a presumption of conformity** with elements set out in EU Regulations 2018/762 and 2019/773. Further information can be found in the [Guide for the application of the TSI OPE](#) and in the [Guidance for safety certification and supervision](#).
- This means that the **AMOC should be accepted throughout the EU** by Member States and NSAs. Importantly, if a Member State and/or NSA requires an RU or IM to comply with national requirements, then that MS or NSA will have to provide evidence as to **why their national requirements provide a higher degree of risk control** than that set out in the AMOC.
- **As a result, this AMOC can be accepted by ERA and/or the NSAs when an RU or IM applies for a safety certificate or authorisation**, against the requirements of EU Regulation 2018/762 on safety management systems and against the applicable requirements of TSI OPE.

# AMOC: ACCEPTABLE MEANS OF COMPLIANCE

- An **RU and/or IM remain responsible for how the AMOC is used** in their SMS. They should ensure that they can identify which risks the AMOC provides controls against. The AMOC should not just be included in the SMS without the RU and/or IM **justifying its use through their risk management procedures** and their document management system. It is particularly important that when the RU and/or IM use the information in the AMOC that they **provide return of experience** and/or information from accidents to ensure that the advice remains relevant and up to date... Any links to good practice is the responsibility of the provider to ensure that they remain up to date and keep ERA informed of any changes/amendments”. RUs/IMs can deviate from an AMOC if they prove that what they do is as good as or better than the requirements in the AMOC.
- **AMOC allows for innovations, as it is still possible to demonstrate that a project is “better” than ...**, especially with the 4<sup>th</sup> industrial revolution and digitalization, AI, ML, ... It allows as well to better sequence” the revision cycle of TSI and CSM.

## Publication date

20/12/2021







## Related TSI

Operation and Traffic Management

## AMOC



## Related documents :

-  [Opinion ERA/OPI/2021-08 \(290.77 KB\)](#)
-  [ERA-OPI-2021-8 AMOC Light Impact Assessment \(295.61 KB\)](#)
-  [AMOC supporting guidance \(293.61 KB\)](#)
-  [TSI OPE AMOC Safety of Load \(201.05 KB\)](#)
-  [TSI OPE AMOC Safety of passengers \(238.99 KB\)](#)
-  [TSI OPE AMOC tests checks braking \(331.06 KB\)](#)
-  [TSI OPE AMOC tests checks braking - Annex I - Appendix A - brake sheet \(529.57 KB\)](#)

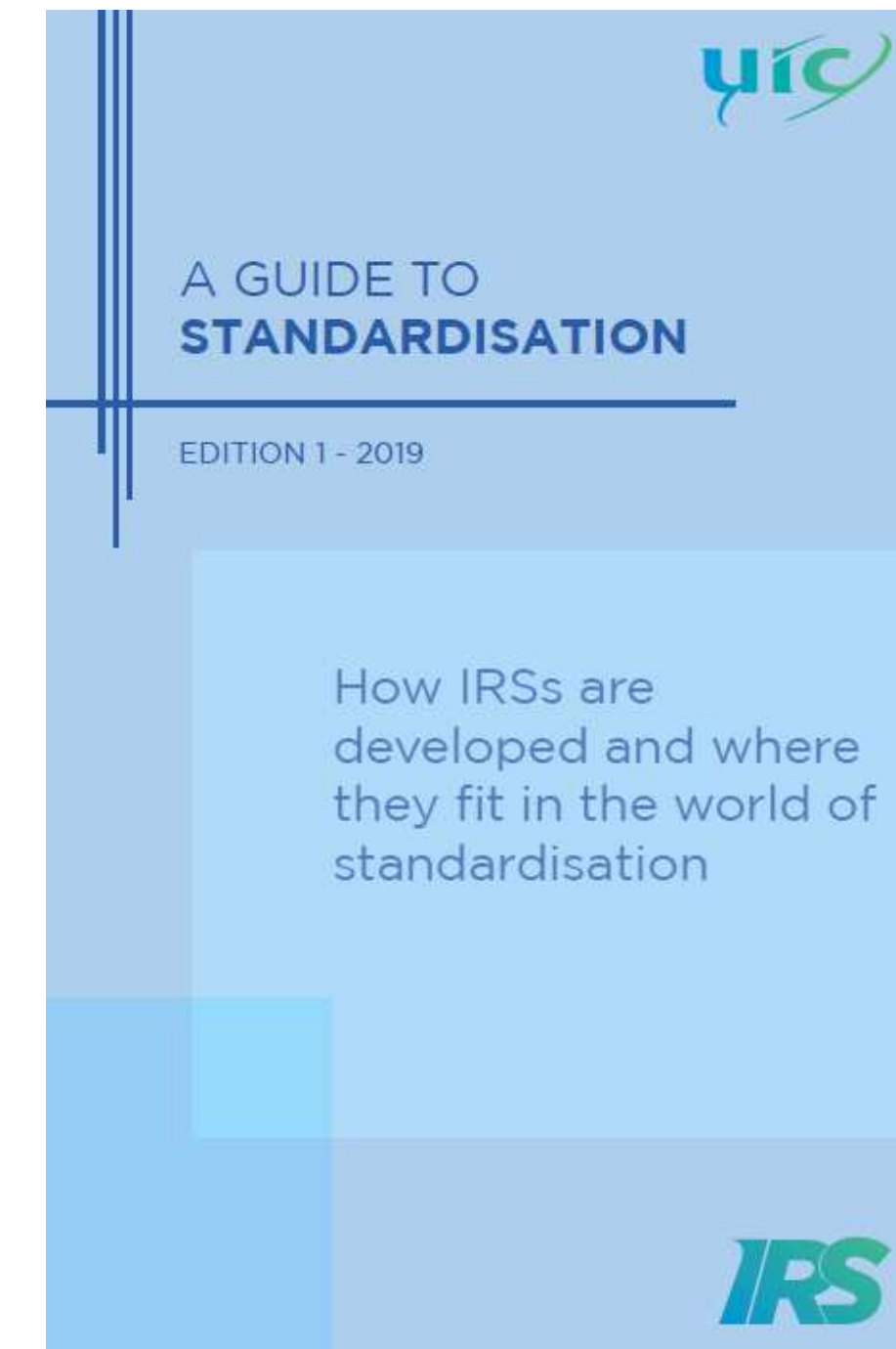
# IRS & TECHNICAL DOCUMENTS as AMOC OR GUIDELINES

## UIC documents as AMOCs: Safety of load & Tests and checks before departure

- **UIC Loading Guidelines - Code of Practice for Loading and Securing Cargo on Vehicles in Rail Freight Traffic :**  
Volume 1 – Principles  
Volume 2 – Goods
- **IRS 40471-3 :** Inspection of dangerous goods consignments (inspection before train movement)
- **IRS 40453 :** Procedures for air brake tests effected with a traction unit :Brake tests for conventional freight train (wagons)
- **IRS 40421 :** Rules for the consist of and braking of international freight trains : rules for freight train brake settings as well as the content and format of the brake sheet and wagon list for use in freight traffic
- **IRS 40472 :** Braking sheet, consist list for locomotive drivers and requirements for the exchange of data necessary to the operations of freight rail services
- **ATTI-GCU refers to GCU:**
  - Inspections, tests and checks before train movement
  - Quality assurance procedure,
  - Managing defects and irregularities

## Presumption of Conformity

- Harmonised EN standards
- AMOC
- Guidelines



# SPECIFICATION / STANDARDISATION HOW UIC WORKS FOR RAILWAY COMMUNITY

- Achieve an efficient and practicable **RETURN OF EXPERIENCE** based on a confidential international process of **SHARING** : DNA of UIC is REX, including positive REX
- Deliver technical solutions (procedures, guidances, tools, etc.), as means for **OPERATIONS & SAFETY** (ex: IRS, AMOC)
- Design and Deliver Trainings and Tools (Academy + Cluster/Hub)





# SPECIFICATION / STANDARDISATION

## HOW UIC WORKS WITH THE SECTOR

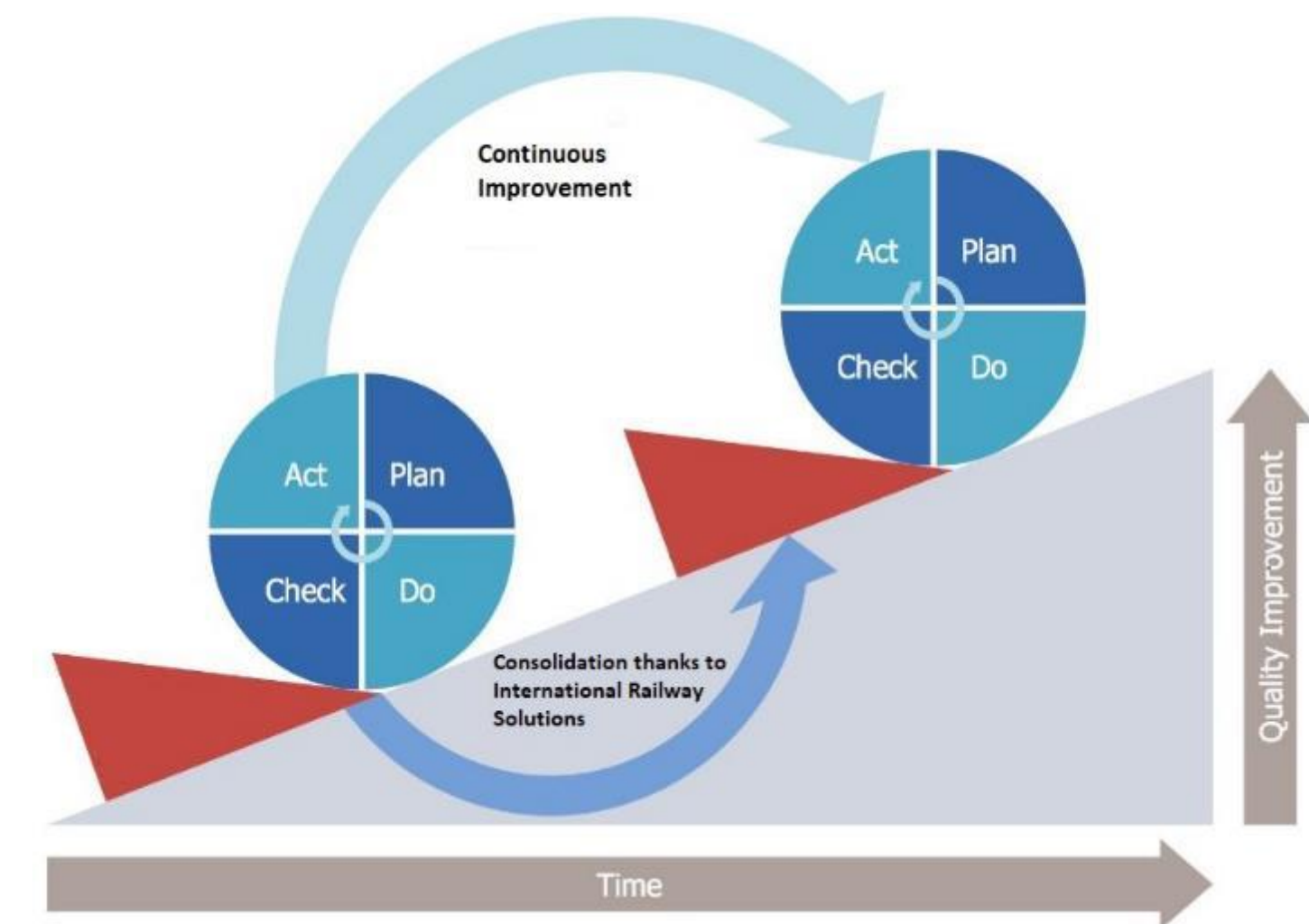
**UIC continues to cooperate with all relevant stakeholders in developing documents with a focus on:**

- Functional concepts and principles
- Functional Requirements and Specifications
- Integration in the Railway System Architecture
- Tests
- Operations (integration and REX)

**Through adequate agreements:**

- The work programs of the different stakeholders are synchronized/harmonized beforehand
- The synchronized/harmonized documents of the different stakeholders are therefore cross-referenced

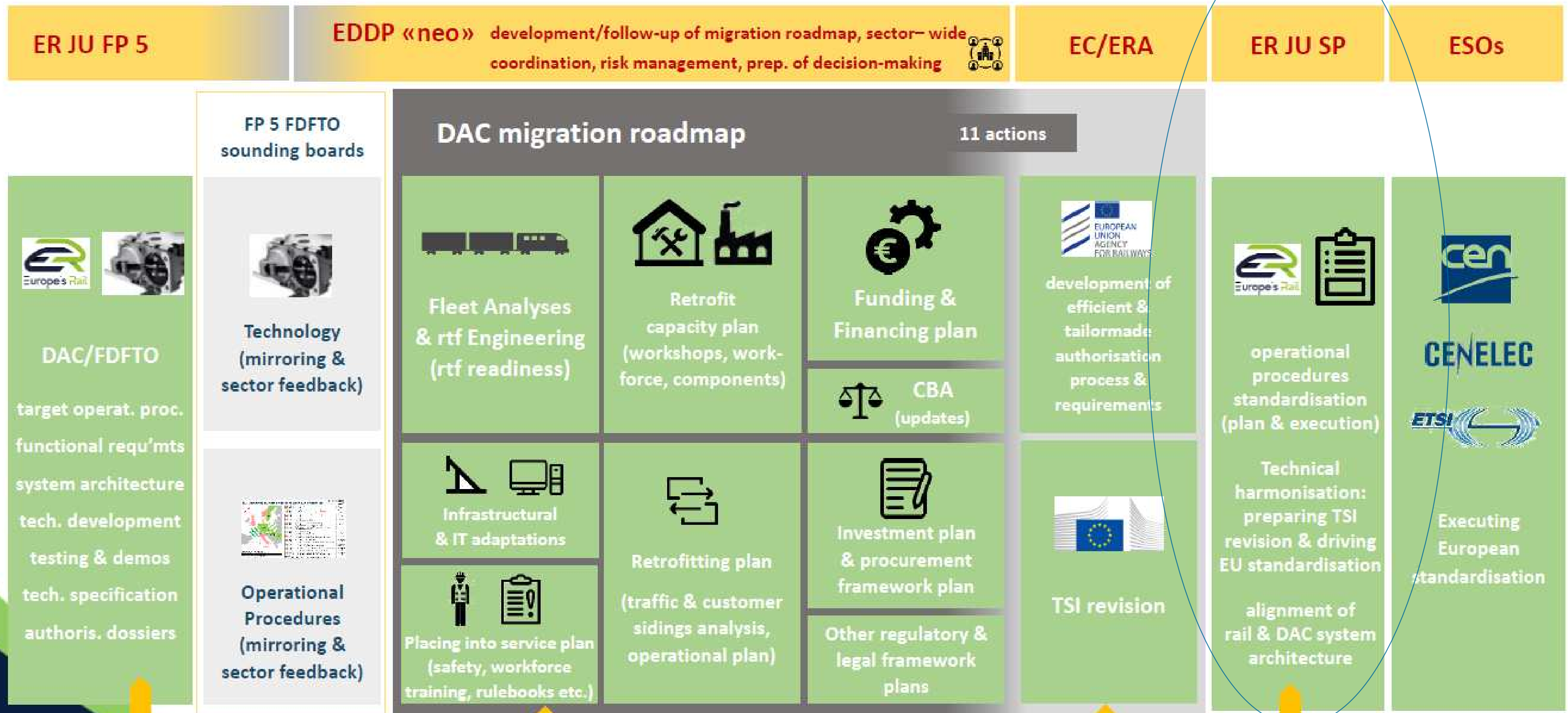
**OPERATIONS** encompass all the processes and responsibilities required to operate a train with passengers or freight, from **SERVICE DESIGN** to **RETURN OF EXPERIENCE**.



# ERJU - DAC RELATED OPERATIONAL PROCEDURES: AMOC



## DAC migration roadmap integrated into the overall DAC/FDFTO context & activities



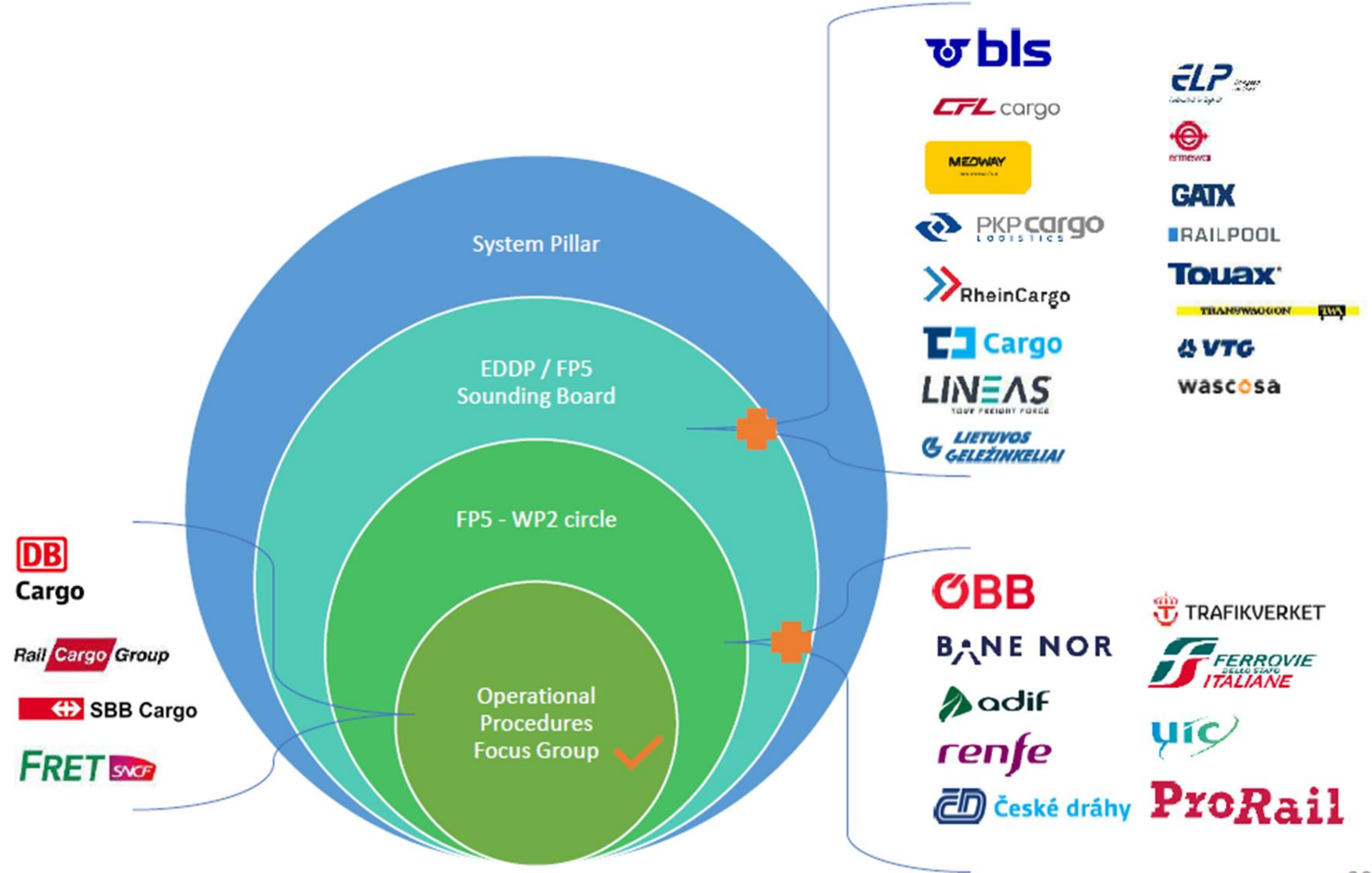
(legally possible) exchange channels still to be defined

# ERJU - DAC RELATED OPERATIONAL PROCEDURES: AMOC

DAC - CORE SYSTEM			
DAC - CORE SYSTEM (Coupling & uncoupling & train configuration)			
1	Automated coupling & manual uncoupling and digital backbone	1	I.4.1 DAC type 4 (incl type 5 upgradability) I.4.2 DAC (hybrid) coupler for loco I.4.3 DAC energy supply & data/ communication solution/ backbone I.4.7 DAC wagon retrofitting
			specific solutions for existing wagons, where standard retrofit is not possible
2	Recording of train composition	3	I.4.5 train composition detection/management system
			communication system, with wagon-ID
3	Automatic (remote) uncoupling	12	I.4.4 DAC type 5
			type 5 actuator + uncoupling control system (incl. Loco interface)
4	Heavier & longer trains (within existing infra limitations)	4	(comes with coupler, no further technical enabler needed)
5	Increased payload	5	(comes with coupler, no further technical enabler needed)
			(elimination of buffers, modified new vehicle design)
6	Increased speed via improved longitudinal forces	7	(comes with coupler, no further technical enabler needed)
DAC - Applications			
DAC - Train preparation			
7	Automatic brake test & calculation of brake capacity	2	I.4.6 automated/automatic brake test system
			automatic brake test system
8	Automated technical wagon inspection	13	II.4.2 digital wagon inspection (incl RST+INF assets)
			wagon telematics, sensors (+video gates, checkpoints)



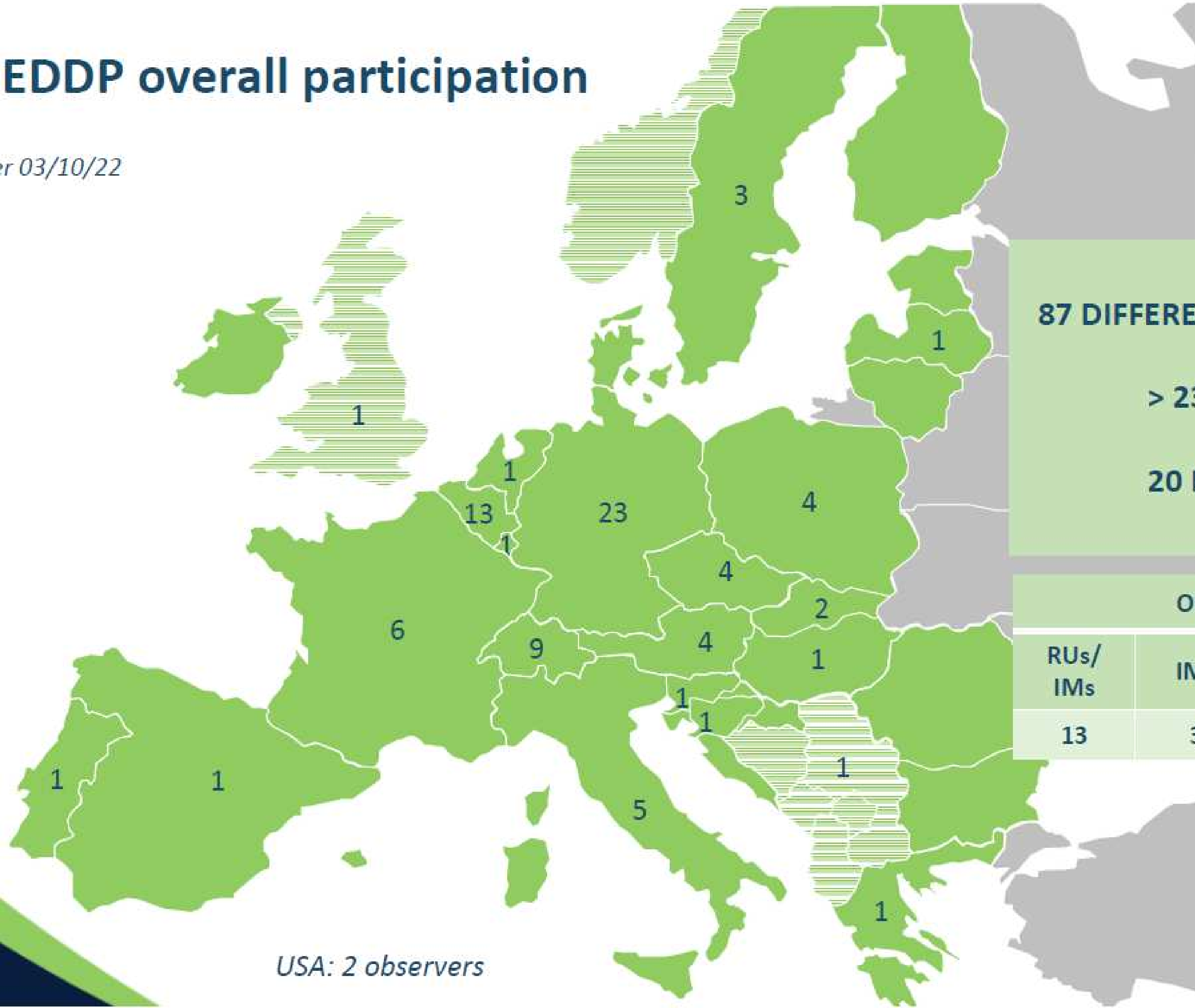
# Steps for shaping the alignment FP 5 → EDDP → SP





# EDDP overall participation

as per 03/10/22



**87 DIFFERENT ORGANISATIONS** (10/22)  
**> 235 PARTICIPANTS**  
**20 DIFFERENT COUNTRIES**

ORGANISATIONS BY TYPE

RUs/ IMs	IMs	WKs	INDU- STRY	OTHER
13	3	16	20	36

*w/o US, UK*

USA: 2 observers



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**Thank you for your kind attention.**